

- 17 -

CLAIMS

1. A filtration installation for filtering water of a water pool (2), in particular of a swimming pool, arranged to be filled with water upto a predetermined water level (3), which installation comprises a filter vessel (4) separate from the water pool (2) and containing a filter bed (5),
5 the filter vessel (4) being arranged to be installed next to the pool (2) with its filter bed (5) situated at least partially underneath said predetermined water level (3), with at least one inlet pipe (6) extending between the pool (2) and an upper portion (12) of the filter vessel (4) for conducting water
10 from the pool (2) to the filter vessel (4) and with at least one return pipe (8) extending between a lower portion of the filter vessel (4) and the pool (2) for conducting filtered water having passed through the filter bed (5) to the pool (2), the installation further comprising a reversible pump (9) enabling to generate, in a backwashing state, an upward flow of water
15 through the filter bed (5), and at least one drain pipe (11) arranged for removing the water pumped by the pump (9) in its backwashing state through the filter bed (5) into the upper portion (12) of the filter vessel (4), characterised in that the upper portion (12) of the filter vessel (4) is in liquid communication through said inlet pipe (6) with the water in the pool
20 (2) so that water from the pool (2) can flow by gravity through the inlet pipe (6) into the filter vessel (4), the inlet pipe (6) is provided with a one-way valve (10) arranged to prevent a flow of water from the upper portion (12) of the filter vessel (4) into the pool (2), the drain pipe (11) is arranged upstream the filter bed (5) but downstream the one-way valve
25 (10), and said reversible pump (9) is disposed downstream the drain pipe (11) so that the water pumped upwards through the filter bed (5) in the backwashing state of the pump (9) is removed through the drain pipe (11) whilst in the reversed filtering state of the pump (9), water is pumped out of the pool (2) to generate a flow of water from the pool (2) through

- 18 -

the inlet pipe (6), the filter bed (5) and the return pipe (8) back to the pool (2).

2. An installation according to claim 1, characterised in that the drain pipe (8) is connected to the upper portion (12) of the filter vessel (4).

3. An installation according to claim 2, characterised in that the drain pipe (8) is connected to the upper portion (12) of the filter vessel (4) through the intermediary of the inlet pipe (6).

4. An installation according to any one of the claims 1 to 3, characterised in that it comprises a removable shut-off element (33) provided with a fitting (34) for connecting a suction tube (35) for a vacuum cleaning unit (36), the shut-off element (33) being arranged to stop, upstream the reversible pump (9), in the filtering state of the pump, at least partially said flow of water from the pool (2) through the inlet pipe (6) to enable to create a reduced pressure downstream the shut-off element (33), the shut-off element being arranged to be applied either upstream or downstream the drain pipe (11), when the shut-off element (33) is arranged to stop the flow of water upstream the drain pipe (11), the drain pipe is provided with a further one-way valve (41) to enable to create said reduced pressure downstream the shut-off element (33).

5. An installation according to claim 4, characterised in that between said shut-off element (33) and the reversible pump (9), the installation is arranged to be closed substantially hermetically.

6. An installation according to any one of the claims 1 to 5, characterised in that the drain pipe (11) is located at a level such as to provide an overflow for the pool (2) draining in particular water from the pool when the water level in the pool rises above said predetermined water level (3).

7. An installation according to any one of the claims 1 to 6, characterised in that said reversible pump (9) is a submersible pump.

- 19 -

8. An installation according to any one of the claims 1 to 7, characterised in that said reversible pump (9) comprises a propeller (14) or an archimedes' screw for generating the flow of water through the filter bed (5).

5 9. An installation according to any one of the claims 1 to 8, characterised in that said reversible pump (9) is disposed upstream the filter bed (5), the installation being arranged to be closed substantially hermetically between the reversible pump (9) and the filter bed (5) so that the water in the filter bed (5) can be pressurised by means of the pump
10 when working in its filtering state.

10. An installation according to any one of the claims 1 to 8, characterised in that said reversible pump (9) is disposed downstream the filter bed (5).

15 11. An installation according to claim 10, characterised in that said reversible pump (9) comprises a propeller (14) situated at the outlet of the return pipe (8) for generating the flow of water, a by-pass (31) being provided for supplying additional water directly from the pool (2) to the pump (9) to be able to create a current in the pool (2) against which a swimmer can swim-in-place in the pool.

20 12. An installation according to claim 11, characterised in that the by-pass (31) is provided with a shut-off valve (32).

 13. An installation according to claim 11 or 12, characterised in that said reversible pump (9) is a submersible pump having in addition to said propeller (14) a pump motor (15) which is also
25 submerged in the water and which is in particular at least partially situated within a recess (18) in the wall (1) of the pool (2) forming the outlet of said return pipe (8) in the pool.

14. An installation according to claim 13, characterised in that the propeller (14) of the submersible pump (9) projects outside a wall

- 20 -

(1) of the pool (2) into the pool, the by-pass (31) of water to the propeller (14) being located along this wall (1) of the pool.

5 15. An installation according to any one of the claims 1 to 14, characterised in that the portion of said inlet pipe (6) between the pool (2) and the one-way valve (10) has a top surface situated over the entire length of this portion of the inlet pipe above said predetermined water level (3) of the pool (2) so that when connected to the pool filled with water, the water in this portion of the inlet pipe (6) is over the entire length of this portion at said predetermined water level (3) and said one-
10 way valve (10) comprises an upright flap hinging about a hinge (13) fixed to its bottom edge to form a skimmer weir.

 16. An installation according to any one of the claims 1 to 15, characterised in that the top of the filter bed (5) is located below the predetermined water level (3) of the pool (2).

15 17. An installation according to any one of the claims 1 to 16, characterised in that filter vessel (4) is connected by said inlet pipe (6) to at least one inlet situated at said predetermined water level (3) and to at least one bottom inlet (24) situated in the bottom of the pool (2).